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What is claimed is:

1. An isolated strain of Hepatitis B virus designated Human Hepatitis B Virus Surface Antigen-'S'-133 Oon Strain (Methionine to Threonine) and deposited under Accession Nos. P97121504, P97121505 and P97121506 with the European Collection of Cell Culture on 15th December 1997.

2. An isolated nucleic acid encoding a polypeptide which is a mutant major surface antigen of a strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a threonine rather than a methionine.

3. The isolated nucleic acid of claim 2, wherein the polypeptide is being encoded by nucleotides 155 through 835 of the nucleic acid sequence designated SEQ. I.D. No. 1.

4. The isolated nucleic acid of claim 3, comprising nucleotides "ACG" in position 551-553.

5. The isolated nucleic acid of claim 2, wherein the nucleic acid is DNA.

6. The isolated nucleic acid of claim 2, wherein the nucleic acid is RNA.

7. The isolated nucleic acid of claim 5, wherein the nucleic acid is cDNA.

8. The isolated nucleic acid of claim 5, wherein the nucleic acid is genomic DNA.

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9. The isolat d nucleic acid of claim 2, wherein the polypeptide has an amino acid sequence substantially identical to amino acid residues 174 through 400 of the amino acid sequence designated SEQ. I.D. No. 3.

10. An isolated nucleic acid which encodes a peptide, wherein the peptide is encoded by a nucleic acid molecule comprising nucleotides 527 through 595 of SEQ. I.D. No. 1.

11. An isolated nucleic acid which encodes a peptide, wherein the peptide has an amino acid sequence comprising amino acid residues 298 through 320 of the amino acid sequence designated SEQ. I.D. No. 3.

12. A vector comprising an isolated nucleic acid encoding a polypeptide which is a mutant major surface antigen of a strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a threonine rather than a methionine and operatively linked to a promoter of RNA transcription.

13. A vector comprising an isolated nucleic acid encoding a peptide, wherein the peptide is encoded by a nucleic acid molecule comprising nucleotides 527 through 595 of SEQ. I.D. No. 1.

14. The vector of claim 12 or 13, wherein the vector comprises viral DNA.

15. A host vector system for the production of a polypeptide which comprises the vector of claim 12 in a suitable host.

16. A host vector system for the production of a peptide which

comprises the vector of claim 13 in a suitable host.

17. A method of producing a polypeptide, which comprises growing the host vector system of claim 15 under suitable conditions permitting production of the polypeptide and recovering th polypeptide so produced.

18. A method of producing a peptide, which comprises growing the host vector system of claim 16 under suitable conditions permitting production of the polypeptide and recovering the polypeptide so produced.

19. A method of obtaining a polypeptide in purified form which comprises:
(a) introducing the vector of claim 12 into a suitable host cell;
(b) culturing the resulting host cell so as to produce the polypeptide;
(c) recovering the polypeptide produced into step (b); and
(d) purifying the polypeptide so recovered.

20. A method of obtaining a peptide in purified form which comprises:
(a) introducing the vector of claim 13 into a suitable host cell;
(b) culturing the resulting host cell so as to produce the polypeptide;
(c) recovering the polypeptide produced into step (b); and
(d) purifying the polypeptide so recovered.

21. A purified polypeptide which is a mutant major surface antigen of a strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide

is a threonine rather than a methionine.

22. A purified polypeptide obtained from the method of claim 19.

23. A purified peptide, wherein the peptide has an amino acid sequence comprising amino acid residues 298 through 320 of the amino acid sequence designated SEQ. I.D. No.: 3.

24. A purified polypeptide obtained from the method of claim 20

25. An oligonucleotide of at least 15 nucleotides capable of specifically hybridizing with a unique sequence of nucleotides within a nucleic acid which encodes a polypeptide which is a mutant major surface antigen of a strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a threonine rather than a methionine, without hybridizing to any sequence of nucleotides within a nucleic acid which encodes the major surface antigen of a wildtype hepatitis B virus.

26. The oligonucleotide of claim 25 comprising nucleotides 527 through 595 of SEQ. I.D. No. 1.

27. A method of obtaining antibodies to a polypeptide which is a mutant major surface antigen of a strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a threonine, rather than a methionine, and not to the major surface antigen of a wildtype hepatitis B virus, comprising:

(a) obtaining the polypeptide in a purified form;

(b) immunizing an organism capable of producing antibodi s

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against the purified polypeptide;

(c) collecting the produced antibodies;

(d) combining the produced antibodies and the purified polypeptide under conditions to form a complex; and

(e) determining which produced antibodies form a complex with the purified polypeptide so as to obtain antibodies to the polypeptide.

28. The method of claim 27, wherein the polypeptide is being encoded by nucleotides 155 through 835 of the nucleic acid sequence designated SEQ. I.D. No. 1.

29. The method of claim 27, wherein the polypeptide has an amino acid sequence substantially identical to amino acid residues 174 through 400 of the amino acid sequence designated SEQ. I.D. No. 3.

30. The method of claim 27, wherein the organism comprises a rabbit or a mouse.

31. A method of obtaining antibodies to a peptide, wherein the peptide has an amino acid sequence comprising amino acid residues 298 through 320 of the amino acid sequence designated SEQ. I.D. No. 3, comprising:

(a) obtaining the peptide in a purified form;

(b) immunizing an organism capable of producing antibodies against the purified peptide;

(c) collecting the produced antibodies;

(d) combining the produced antibodies and the purifi d peptide under conditions to form a complex; and

(e) determining which produced antibodies form a complex with the purified peptide so as to obtain antibodies to the peptide.

32. The method of claim 31, wherein the organism comprises a

rabbit or a mouse.

33. The antibodies obtained in claim 27 or 31.

34. Monoclonal antibodies of the antibodies of claim 33.

35. Antibodies capable of detecting a polypeptide which is a mutant major surface antigen of a strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a threonine, rather than a methionine, and incapable of detecting the major surface antigen of a wildtype hepatitis B virus.

36. Antibodies capable of detecting a peptide, wherein the peptide has an amino acid sequence comprising amino acid residues 29B through 320 of the amino acid sequence designated SEQ ID No. 3.

37. Use of a nucleic acid encoding a polypeptide which is a mutant major surface antigen of a strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a threonine, rather than a methionine for determining whether a subject is infected with a strain of Hepatitis B virus designated Human Hepatitis B Virus Surface Antigen-'S'-133 Oon Strain (Methionine to Threonine), wherein such determination comprises:

(a) obtaining an appropriate nucleic acid sample from the subject; and

(b) determining whether the nucleic acid sample from step (a) is, or is derived from, a nucl ic acid encoding a polypeptide which is a mutant major surface antigen of a

strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a threonine, rather than a methionine.

38. The use of claim 37, wherein the nucleic acid sample in step (a) comprises mRNA corresponding to the transcript of DNA encoding a polypeptide which is a mutant major surface antigen of a strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a threonine, rather than a methionine, and wherein the determining of step (b) comprises:

(i) contacting the mRNA with the oligonucleotide of claim 25 under conditions permitting binding of the mRNA to the oligonucleotide so as to form a complex;

(ii) isolating the complex so formed; and

(iii) identifying the mRNA in the isolated complex so as to thereby determine whether the mRNA is, or is derived from, a nucleic acid which encodes the polypeptide.

39. The use of claim 37, wherein the nucleic acid sample in step (a) comprises mRNA corresponding to the transcript of DNA encoding a polypeptide which is a mutant major surface antigen of a strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a threonine, rather than a methionine, and wherein the determining of step (b) comprises:

(i) translating the mRNA under suitable conditions to obtain an amino acid sequence; and

(ii) comparing the amino acid sequence of step (i) with the amino acid sequence of the isolated nucleic acid of claim 9 so as to thereby determine whether the nucleic acid sample is, or is derived from, a nucleic acid which encodes the polypeptide.

40. The use of claim 37, wherein the determining of step (b) comprises:

(i) amplifying the nucleic acid present in the sample of step (a); and

(ii) detecting the presence of polypeptide in the resulting amplified nucleic acid.

41. Use of an antibody that recognizes a polypeptide which is a mutant major surface antigen of a strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a threonine, rather than a methionine for determining whether a subject is infected with a strain of Hepatitis B virus designated Human Hepatitis B Virus Surface Antigen-'S'-133 Oon Strain (Methionine to Threonine), wherein such determination comprises:

(a) obtaining an appropriate sample from the subject; and

(b) determining whether the sample from step (a) is, or is derived from, a nucleic acid encoding a polypeptide which is a mutant major surface antigen of a strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a thr onine, rather than a methionine by contacting the sample under appropriate conditions to

bind to the antibodies of claim 35 or 36, so as to determine whether a subject is infected.

42. The use of claim 37, 38 or 41, wherein the isolated nucleic acid, oligonucleotide or antibody is labeled with a detectable marker.

43. The use the claim 42, wherein the detectable marker is a radioactive isotope, a fluorophor or an enzyme.

44. The use of claim 37, wherein the sample comprises blood, tissue or sera.

45. Use of a nucleic acid encoding a polypeptide which is a mutant major surface antigen of a strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a threonine, rather than a methionine for determining whether a subject has a predisposition for hepatocellular carcinoma, which comprises:

(a) obtaining an appropriate nucleic acid sample from the subject; and

(b) determining whether the nucleic acid sample from step (a) is, or is derived from, a nucleic acid encoding a polypeptide which is a mutant major surface antigen of a strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a threonine, rath r than a methionine.

46. The use of claim 45, wherein the nucleic acid sample in step (a) comprises mRNA corresponding to the transcript of DNA

encoding a polypeptide which is a mutant major surface antigen of a strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a threonine, rather than a methionine, and wherein the determining of step (b), which comprises:

(i) contacting the mRNA with the oligonucleotide of claim 25 under conditions permitting binding of the mRNA to the oligonucleotide so as to form a complex;

(ii) isolating the complex so formed, and

(iii) identifying the mRNA in the isolated complex so as to thereby determine whether the mRNA is, or is derived from, a nucleic acid which encodes the polypeptide.

47. The use of claim 45, wherein the nucleic acid sample in step (a) comprises mRNA corresponding to the transcript of DNA encoding a polypeptide which is a mutant major surface antigen of a strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a threonine, rather than a methionine, and wherein the determining of step (b) comprises:

(i) translating the mRNA under suitable conditions to obtain an amino acid sequence; and

(ii) comparing the amino acid sequence of step (i) with the amino acid sequence of the isolated nucleic acid of claim 9 so as to thereby determine whether the nucleic acid sample is, or is derived from, a nucleic acid which encodes the polypeptide.

48. The use of claim 45, wherein the determining of step (b)

omprises:

(i) amplifying the nucleic acid present in the sample of step (a); and

(ii) detecting the presence of polypeptide in the resulting amplified nucleic acid.

49. Use of an antibody that recognizes a polypeptide which is a mutant major surface antigen of a strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a threonine, rather than a methionine for determining whether the subject has a predisposition for hepatocellular carcinoma wherein such determination comprises:

(a) obtaining an appropriate sample from the subject; and

(b) determining whether the sample from step (a) is, or is derived from, a nucleic acid encoding a polypeptide which is a mutant major surface antigen of a strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a threonine, rather than a methionine by contacting the sample under appropriate conditions to bind to the antibodies of claim 35 or 36 so as to determine whether the subject subject has a predisposition for hepatocellular carcinoma.

50. The use of claim 46, 47 or 49, wherein the isolated nucleic acid, oligonucleotide or antibody is labeled with a detectable marker.

51. The use of claim 50, wherein the detectable marker is a radioactive isotope, a fluorophor or an enzyme.

52. The use of claim 45, wherein the sample comprises blood, tissue or sera.

53. A method for identifying a chemical compound for use in the manufacture of a medicament capable of treating infection by a strain of Hepatitis B virus designated Human Hepatitis B Virus Surface Antigen-'S'-133 Oon Strain (Methionine to Threonine) wherein the method for identifying the chemical compound comprises:

(a) contacting a polypeptide which is a mutant major surface antigen of a strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a threonine, rather than a methionine, with the chemical compound under conditions permitting binding between the polypeptide and the chemical compound;

(b) detecting specific binding of the chemical compound to the polypeptide; and

(c) determining whether the chemical compound inhibits the polypeptide so as to identify a chemical compound which is capable of treating infection by the viral strain.

54. A method for identifying a chemical compound for use in the manufacture of a medicament capable of preventing infection by a strain of Hepatitis B virus designated Human Hepatitis B Virus Surface Antigen-'S'-133 Oon Strain (Methionine to Threonine), wherein the method for identifying the chemical compound comprises:

(a) contacting a polypeptide which is a mutant major surface antigen of a strain of hepatitis B virus, such

polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a threonine, rather than a methionine, with the chemical compound under conditions permitting binding between the polypeptide and the chemical compound;

(b) detecting specific binding of the chemical compound to the polypeptide; and

(c) determining whether the chemical compound inhibits the polypeptide so as to identify a chemical compound which is capable of preventing infection by the viral strain.

55. A method for identifying a chemical compound for use in the manufacture of a medicament capable of treating hepatocellular carcinoma, wherein the method for identifying the chemical compound comprises:

(a) contacting a polypeptide which is a mutant major surface antigen of a strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a threonine, rather than a methionine, with the chemical compound under conditions permitting binding between the polypeptide and the chemical compound;

(b) detecting specific binding of the chemical compound to the polypeptide; and.

(c) determining whether the chemical compound inhibits the polypeptide so as to identify a chemical compound which is capable of treating hepatocellular carcinoma.

56. A method for identifying a chemical compound for use in th manufacture of a medicament capable of preventing hepatocellular carcinoma, wherein the method for identifying

the chemical compound compris s:

(a) contacting a polypeptide which is a mutant major surf ce antigen of a strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a threonine, rather than a methionine, with the chemical compound under conditions permitting binding between th polypeptide and the chemical compound;

(b) detecting specific binding of the chemical compound to the polypeptide; and

(c) determining whether the chemical compound inhibits the polypeptide so as to identify a chemical compound which is capable of preventing infection by the viral strain.

57. A composition comprising a polypeptide which is a mutant major surface antigen of a strain of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the amino acid sequence of a major surface antigen of a wildtype hepatitis B virus in that the amino acid at position number 133 of such polypeptide is a threonine, rather than a methionine, the amounts of such polypeptide being effective to stimulate or enhance antibody production in a subject, and a pharmaceutically acceptable.

58. A composition comprising a peptide, wherein the peptide has an amino acid sequence comprising amino acid residues 298 through 320 of the amino acid sequence designated SEQ. I.D. NO. 3, the amounts of such peptide being effective to stimulate or enhance antibody production in a subject, and a pharmaceutically acceptable.

59. A composition comprising the chemical compound identifi d by the method of claim 55 in an amount effective to treat

hepatocellular carcinoma and a pharmaceutically effective carrier.

60. A composition comprising the chemical compound identified by the method of claim 56 in an amount effective to prevent hepatocellular carcinoma and a pharmaceutically effective carrier.

61. A composition comprising the chemical compound identified by the method of claim 53 in an amount effective to treat a strain of hepatitis B virus designated Human Hepatitis B Virus Surface Antigen-'S'-133 Oon Strain (Methionine to Threonine) and a pharmaceutically effective carrier.

62. A composition comprising the chemical compound identified by the method of claim 54 in an amount effective to prevent infection by a strain of hepatitis B virus designated Human Hepatitis B Virus Surface Antigen-'S'-133 Oon Strain (Methionine to Threonine) and a pharmaceutically effective carrier.

63. Use of the composition of claim 57 or 58 for treating a subject infected with a strain of Hepatitis B virus designated Human Hepatitis B Virus Surface Antigen-'S'-133 Oon Strain (Methionine to Threonine).

64. Use of the composition of claim 61 treating a subject infected with a strain of hepatitis B virus designated Human Hepatitis B Virus Surface Antigen-'S'-133 Oon Strain (Methionine to Threonine).

65. Use of the composition of claim 57 or 58 for preventing infection by a strain of Hepatitis B virus designated Human Hepatitis B Virus Surface Antigen-'S'-133 Oon Strain (Methionine to Threonine) in a subject.

73. A hepatitis vaccine, comprising a mutant form of the surface antigen of hepatitis B virus, such polypeptide having an amino acid sequence which differs from the wildtype amino acid sequence of the major surface antigen of hepatitis B in that the amino acid at position number 133 of such polypeptide is a threonine rather than a methionine.

74. The vaccine of claim 73, further comprising an adjuvant.